DOCUMENT RESUME

ED 322 491 CS 010 195

AUTHOR Osborn, Jean; Decker, Karen
TITLE Ancillary Materials--What's Out There? Technical Report No. 507.
INSTITUTION Bolt, Beranek and Newman, Inc., Cambridge, Mass.; Illinois Univ., Urbana. Center for the Study of Reading.
SPONS AGENCY Office of Educational Research and Improvement (ED), Washington, DC.
PUB DATE Aug 90
CONTRACT G0087-C1001-90
NOTE 46p.; Some of the material in the attached examples may not reproduce clearly.
PUB TYPE Reports - Research/Technical (143)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Elementary Secondary Education; Language Arts; Layout (Publications); Learning Activities; Programed Instructional Materials; Reading Instruction; Reading Material Selection; *Reading Programs; Sciences; Skill Development; Social Studies; *Textbook Evaluation; Textbook Research; *Workbooks
IDENTIFIERS Textbook Design

ABSTRACT

A study examined the new editions of four of the best-selling reading programs along with workbooks of several different publishers of social studies, science, and language arts programs. An analysis was carried out of the types of tasks found in workbooks and the content of the tasks. Results indicated that the workbooks contain numerous and variable tasks or format types, but that the formats are common across subject matter and grade levels. The study hypothesized that to be successful completing workbook tasks, students must be able to understand, manipulate, and handle large numbers of workbook formats. The study also hypothesized that students who develop this skill are cognizant of some aspects of workbooks that are described under the label, "workbook genre." The study proposed that workbooks be improved so that teachers and students can benefit from their intended effects. (Two tables of data are included, and 23 example workbook pages are attached.) (Author/MG)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED322491

CENTER FOR THE STUDY OF READING

Technical Report No. 507

ANCILLARY MATERIALS--WHAT'S OUT THERE?

Jean Osborn
Karen Decker
University of Illinois at Urbana-Champaign

August 1990

University of Illinois at Urbana-Champaign
51 Gerty Drive
Champaign, Illinois 61820

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

D. Anderson

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☐ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

CS010195

The work upon which this publication was based was supported in part by the Office of Educational Research and Improvement under Cooperative Agreement No. G0087-C1001-90 with the Reading Research and Education Center. The publication does not necessarily reflect the views of the agency supporting the research.

BEST COPY AVAILABLE

EDITORIAL ADVISORY BOARD
1989-90

James Armstrong
Linda Asmussen
Gerald Arnold
Yahaya Bello
Diane Bottomley
Catherine Burnham
Candace Clark
Michelle Commeyras
John M. Consalvi
Christopher Currie
Irene-Anna Diakidoy
Barbara Hancin
Michael J. Jacobson
Jihn-Chang Jehng
Robert T. Jimenez
Bonnie M. Kerr
Paul W. Kerr
Juan Moran
Keisuke Ohtsuka
Kathy Meyer Reimer
Hua Shu
Anne Staliman
Marty Waggoner
Janelle Weinzierl
Pamela Winsor
Marsha Wise

MANAGING EDITOR
Fran Lehr

MANUSCRIPT PRODUCTION ASSISTANTS
Delores Plowman
Debra Gough

Abstract

The workbooks of the new editions of four of the best-selling reading programs were examined along with workbooks of several different publishers of social studies, science, and language arts programs. An analysis was carried out of the types of tasks found in the workbooks (for example, fill in the blanks, match words with pictures, follow a maze), and the content of the tasks (for example, identifying short *e* words, naming the major rivers of the world, comparing the weight of different substances). It was found that the workbooks contain numerous and variable tasks or format types, but that the formats are common across subject matter and grade levels. It is hypothesized that to be successful at completing workbook tasks, students must be able to understand, manipulate, and handle large numbers of workbook formats. It is also hypothesized that students who develop this skill are cognizant of some aspects of workbooks that are described under the label, *workbook genre*. Some intended and unintended effects of the workbook genre are postulated and described. It is proposed that workbooks be improved so that teachers and students can benefit from their intended effects.

ANCILLARY MATERIALS--WHAT'S OUT THERE?

Commercially developed textbook programs typically contain at least three major components: student textbooks, teachers' manuals, and tests for the assessment of progress. These comprehensive programs also offer a number of ancillary materials, most of which support the major components of a program. Ancillary materials come in a wondrous variety: word cards, big books, picture cards, wall charts, letters to parents, cumulative record cards, word lists, games, sentence boards, picture supplements, flash cards, audio tapes, film strips, workbooks, skill books, black line masters, map books, lab manuals, software products for both teachers and students--and the list goes on.

Some ancillary materials, such as wall charts and picture cards, are developed for teachers to use with students. Some, such as cumulative record cards, are for only the teacher's use. Most, however, are developed for students. Almost all of these ancillary materials have the same purpose: to provide students with a medium for practicing, working on, reviewing, or learning independently (often while their teacher is teaching other students), something that is being taught in the classroom.

Ancillary materials are available for almost every school subject for which there are commercially developed textbook programs. They are available for programs developed to teach the major content areas of science, social studies, and mathematics, as well as the not-quite-so-major content areas--such as health, home economics, consumer education, and foreign languages. They are most available and most numerous, however, in the reading and language arts programs developed for elementary and middle school classrooms.

In addition to the ancillary materials associated with comprehensive textbook programs, "stand-alone" materials are developed (most often by companies whose main products are workbooks and ditto masters) to supplement instruction in a number of subject areas. These stand-alone materials are not designed to accompany a specific program, but rather are intended to provide activities for students in the program of any publisher. Among the most used of these materials are the alphabet and phonics workbooks developed for kindergarten and first and second grades.

Most ancillary materials, however, are a part of comprehensive programs. And no matter what the subject, the most used of the ancillary materials are workbooks. Workbooks are typically bound in soft covers containing from 100 to 200 pages. Each of these pages contains a separate task or activity. Workbooks are most often consumable, that is, students write their answers on the pages. Workbooks sometimes have other names: skill builders, skill books, bonus books, and independent practice books. A close relative of workbooks, black line masters, permit teachers to run off workbook type activities of their choice on school district paper.

In recent years, workbooks have been attacked from many quarters: researchers, who question their value in supporting learning; teachers, who want to have more time for other activities; curriculum planners, who want teachers to be more creative; parents, who accuse schools of giving their children "busy work"; speakers at conventions of reading teachers, who worry about the fragmentation of learning in workbook tasks and propose more holistic activities; and some college professors, who encourage teachers to develop their own activities. Despite these attacks, workbooks continue to be published and continue to be purchased. In fact, a recent analysis of the kindergarten and first-grade materials of 1989 editions of basal reading programs indicates that these programs contain more workbook pages than previous editions (Durkin, 1989).

What do students *do* when they do workbooks? They fill in blanks, underline words and sentences, and circle words and phrases. They draw lines to match a word to a letter, a word to a word, a picture to a word, and a picture to a picture. They fill in bubbles and the cells of tables and charts. They select words from lists and put them (or letters that stand for them) in blanks. They select words and

sentences in arrays of possible answers to multiple choice items. They seek and (if they find them) write secret words in blanks. They label diagrams, color in parts of maps, and sometimes, if they can write small enough, write words to identify parts of maps. They do mazes, crossword puzzles, and matrix puzzles. They write sentences ("Give your answers in complete sentences") and words ("Write the word on the line") and letters that stand for words or sentences ("Write the letter of the sentence opposite the word it defines"). And more.

How can the extensive use of workbooks be explained? Our observation is that well-established educational practices usually stay well established--despite the attacks of their critics--because in some way they serve teachers and students. What does research have to say about the use and effectiveness of workbooks?

Research About Workbook Use and Effectiveness

Workbooks typically contain exercises one page in length on which students write responses. Classroom observation studies have documented that students spend a great deal of time on the many pages of their workbooks and on the single dittoed pages their teachers have copied from black line masters. Anderson (1984) estimated that elementary school students complete an average of 1,000 workbook pages a year for reading instruction alone. The most specific information comes from observations of students during classroom periods allocated to reading instruction. Anderson (1981) also found that students spend up to 70% of their instructional time in reading periods doing seatwork--work that frequently consisted of "written tasks done without direct teacher supervision." In another study, she found that students spent at least 60% of the time allocated for reading instruction on these kinds of activities (Anderson, 1984).

Less information is available about how students spend their allocated time in other subject areas. But, discussions with publishers of language arts, social studies, and science programs indicate that although the workbooks of these programs are not as widely used as those of reading programs, they still account for a significant portion of the sales. And although the sales of materials do not assure they are actually used, repeat sales of the workbooks of a program are a reasonably strong indication that the workbooks are regularly used in classrooms.

Given the evidence that workbooks are used so extensively in classrooms, what is known about their effect on student learning? Oddly enough, the research about these extensively used materials is not very extensive.

Time-on-task studies shed a little light on how workbook activities affect student achievement. From these studies (Fisher et al., 1978) we know that students doing independent workbook-type activities (seatwork) typically spend less time-on-task than when working with their teachers in small groups. However, this situation can be affected by the extent to which teachers hold students accountable for seatwork. Students who are held responsible for completing seatwork are more likely to be attentive and stay on task (Good & Beckerman, 1978). A recent compilation of data from a longitudinal study (Meyer, Wardrop, & Hastings, 1989) indicates that the kindergarten and first-grade classrooms in which students spend time in workbooks are typified by higher reading scores.

In a study of eight first-grade classrooms, Anderson (1984) found that from 30 to 60% of the time allocated for students' reading instruction was spent doing some form of seatwork. She observed that some students did not appear to benefit from their seatwork activities:

> There was a group of students whose responses to seatwork frequently were not facilitative to learning . . . they revealed a lack of understanding of the content or skills in the seatwork and they used strategies that were not likely to strengthen their

> understanding. In general, they did not seem to "make sense" of their seatwork tasks in ways that might further their learning. (p. 93)

Further, investigations by Anderson and her colleagues (Anderson, Brubaker, Alleman-Brooks, & Duffy, 1984) indicate that such students often develop strategies that permit them simply to complete the work on the page, and that these strategies have little or no relationship to learning or even to the content of the page. They contend that the development of such strategies leads to an increase in frustration and additional low achievement.

In her analyses of workbook tasks, Osborn (1984, 1985) observed that "a good proportion of workbook tasks are at best imperfect and not very efficient and at worst misleading and confusing" (1984, p. 54). She found that workbook exercises were often irrelevant to what was going on in the rest of the reading lesson, failed to emphasize skills that have an obvious payoff in reading and writing, contained blatant inaccuracies, and presented students with confusing directions.

Osborn's special concern was the use of workbooks with students who have difficulty learning to read. She noted that teachers often turn to supplementary workbooks to provide extra instruction and practice for students in trouble and commented that "Even more pages of irrelevant and pointless tasks may have a particularly adverse effect on children for whom learning to read is difficult" (1984, p. 54).

Workbooks and Publishers

Given this conflicting picture of workbook use and effectiveness, how do publishers view these somewhat controversial materials? We suspect a bit ambiguously. It must be noted that workbooks are not only the most *used* of the ancillary materials, but for publishers, they are the most profitable of the many components--ancillary and otherwise--of comprehensive programs. Because of the competitive nature of the educational publishing industry, sales figures on the different components of textbook programs are not readily available. We suggest, however, that our assertion can be confirmed by talking to almost any school administrator in charge of textbook purchases or by engaging in a private conversation with a publishing company executive. In fact, an editor of one major basal reading publishing house calculated that his company offers just over 24,000 pages of workbook-type materials to accompany its major basal reading program.

The economics of this situation is easily explained. Although hard-bound student textbooks are usually the most expensive component of a textbook program, they are typically used and reused in classrooms for about seven years. Workbooks are much less costly. But because workbooks are "consumable," and must be reordered each year, they account for a large part of the total cost of a reading program. The following chart showing the per classroom cost of a third-grade basal reading program illustrates why workbooks make a lot of money for their publishers.

Year 1	
Teachers' Manuals	Often free with purchase of other components
Student Textbooks	$12 per pupil x 25 pupils
Workbooks	$3 per pupil x 25 pupils
Total Cost Year 1	$15 per pupil x 25 pupils
Year 2 Workbooks	$3 per pupil
Year 3 Workbooks	$3 per pupil
Year 4 Workbooks	$3 per pupil
Year 5 Workbooks	$3 per pupil
Year 6 Workbooks	$3 per pupil
Year 7 Workbooks	$3 per pupil
Total Workbook Cost Years 1 through 7	$21 per pupil x 25 pupils
Total Textbook Cost Years 1 through 7	

Thus, although the first-year cost of the student textbooks and ancillary materials is considerable, the costs of workbooks over seven years exceeds ($21.00) the per-pupil cost of the textbooks. For many

third-grade classrooms, the amount paid for workbooks is easily more than ($1.71 per year, when averaged over seven years) double that of the above estimate. Most basal reading programs offer two or more workbooks at each grade level, and many classrooms utilize these additional materials. It should also be noted that this estimate includes only the one set of workbooks used for reading instruction and does not include any of the other workbooks that might be used: social studies, mathematics, and some "stand-alone" materials.

For what subjects do school districts buy the most workbooks? Discussions with several major educational publishers confirmed our hunches: The workbooks associated with the major basal reading programs are the "best sellers." Following these, in approximate order, are the workbooks that accompany spelling and language arts programs, social studies programs, science programs, and mathematics programs. In addition, the "stand-alone" sets of workbooks also have a big market, often accounting for a significant part of a school district's workbook purchases.

Workbooks in Other Subjects

Although, as indicated earlier, the workbooks of reading programs have been subjected to some research and analysis, the workbooks of social studies and science programs represent a vast unexamined arena. We determined it might be of value to compare the workbooks of reading programs with those of elementary science, social studies, and language arts programs.

To carry out our project, we first acquired the new editions of four basal reading programs, and examined a sometimes--but not always--random sampling of the pages from the fourth-grade workbooks of these programs. (Occasionally we followed the appearance of a certain format within a single other times we looked for tasks of a particular content.)

We then selected the workbooks of several different social studies, science, and language arts programs. (In several cases we chose a content area workbook and reading workbook from the same publisher so as to compare types of tasks in the workbooks of the same publisher.) So in addition to the four reading workbooks, we looked at four social studies workbooks, four science workbooks, and five English language arts workbooks. We also examined the workbooks of the surrounding grade levels of these programs.

As we examined all of these workbooks we considered the *types* of tasks (for example, fill-in-the-blanks, match words with pictures, follow a maze), and the *content* of the tasks (for example, using short *e*, identifying the major rivers of the world, comparing the weight of different substances).

During our examination of these many workbooks we came to three rather simple-minded conclusions. Our first conclusion was that the types of task formats in workbooks were quite numerous and quite variable, but were often common across subject matter and across grade levels. The second conclusion was that the content of the workbooks was for the most part related to the content of the programs, but often in a cursory and superficial manner. Our third conclusion involved students: to be successful at doing workbook tasks, students must be able to understand, manipulate, and handle large numbers of workbook formats, in addition to being very well acquainted with their content. We will discuss these conclusions in order.

Types of workbook formats. We were impressed with the variety of the types of workbook formats with which students have to cope to perform well on workbook pages. Often each succeeding page presents a different format. For example, in one 182-page workbook, we found 23 major and distinct formats; in an 80-page social studies workbook, 18 formats; and in a 92-page science workbook, 21 formats. Most formats have variations. Occasionally, more than one format appears on a single page.

We were not only impressed with the number of formats that students encounter in any given workbook, but we were also impressed by the number of formats that were common to most of the grade levels of the same program, as well as to the workbooks of all the subjects and all the publishers we examined. For example, the multiple choice format travels up and down the grade levels within each subject area, and also travels across the subject areas--from reading to social studies to science to language arts. When students learn how successfully to choose the right answer from a variety of choices, they acquire a skill that they will use in all grade levels, in all subjects, and probably in the tests that they will take for the rest of their lives.

We categorized the most common format type. These appear in Table 1.

[Insert Table 1 about here.]

The subject of each program appears at the top of each column; the letter represents the publisher code (for example, Reading B and English B are from the same publisher). The table includes three major categories of format types, these are listed to the left: "Puzzles," "Visuals," and "Facsimiles." The most common specific format types are listed under each category label. An x in a right-hand column indicates multiple appearances of a format type in a workbook. In sorting formats, it was often difficult to put one style of working through a task exclusively in one format type. Many pages were "blends" of several formats, and variations on several different types. Nonetheless, a number of formats stood out as common; these are described below.

Puzzles. This format type includes a variety of puzzle activities: crossword puzzles, the making and breaking of codes, unscrambling scrambles of letters, searching for secret words in answers or pictures, and letter grids--a square of letters that contains words to be circled.

Visuals. This format type includes map work, diagram labeling, picture recognition, and completing charts or graphs.

Facsimiles. This format type includes reprints from a portion of a book (for example, dictionary pages, portions of an index, tables of contents, pages from a television guide), illustrations of a shelf of alphabetized encyclopedias, reproductions of cards from a card catalog, and newspaper articles.

Our examination of format types led us to categorize some formats by the responses they required. The most frequent ways students must respond to the directions on workbook pages are summarized in Table 2.

[Insert Table 2 about here.]

Again, the subject of each program appears at the top of each column. The ways of responding are listed on the left. We have divided these into three rather uneven categories. The first, "Response Types," contains a number of the common responses required for the completion of workbook tasks, the second, "Read and Respond," identifies a format type common to essentially all workbooks, and the third, "Directions," identifies two types of possibly confusing directions. A brief description of each of the entries appears below.

Response Types. Elimination (in which the number of answers listed equals the number of blanks to be filled in); underlining (a word, a phrase, or a sentence); matching (copying or drawing lines from letters to words or a part of a picture to a whole picture); multiple choice (in a variety of forms); fill in the blank (with a word--with the possible answers sometimes provided and sometimes not); written (a phrase, sentence, or paragraph in often not very adequate space); ordering (in which the events of a paragraph or a story are to be arranged in sequence).

Read and Respond. Portions of text, usually one to three paragraphs that tell a "story" or present information. Questions about the text follow.

Directions. Two potential problems in directions: location of directions and multiple directions. "Multiple" indicates a format in which students are asked to do two or more activities to complete the task. They may be asked to circle a phrase and then write a word, or to underline a portion of a sentence and then fill in a blank; sometimes a task requires the students to go through several embedded steps to complete the page.

As Tables 1 and 2 reveal, most ways of responding (and variations of them) were found in all the workbooks we examined--reading, social studies, science and language arts.

Success at Working in Workbooks

What do students who breeze through workbook tasks know? We hypothesized that to be successful in workbook activities, students have not only to become comfortable with the content of workbook tasks, but that they also have to become format experts. We suspect that when such students begin to work in their assigned workbook pages, they either recognize quickly the response demands of a format and set to work, or understand very well how to figure out the meaning of often unclear and ambiguous directions.

An examination of the workbook pages that are typically assigned for one day in a subject reveals that students will encounter five or more different formats. For example, in one day's assignment in a reading program, a student must work through five formats that are contained in three workbook pages and deal with five sets of directions. These directions are written out below.

On the first page:

> A. Match each work with its definition. Write the letter of the definition on the line.
>
> B. Below are some incomplete sentences about the story. Match the beginning with the end of each sentence. Write the letter of the end of each sentence on the line.

On the second page:

> A. A contraction is a shortened form of two words. The apostrophe takes the place of the missing letters. Underline the contraction that is formed by joining the two key words on the left.
>
> and
>
> B. Complete each sentence. Write the contraction that is formed by joining the key words.

On the third page:

> These directions are for hiking from Oak Grove Campground to Lookout Point.
>
> 1. Start at Oak Grove Campground.

2. Walk down Oak Road.
3. Walk left on Winding Road.
4. Walk right on Robin Road.
5. Walk right on Short Path.
6. Arrive at Lookout Point.

Use the map to write the six important directions for hiking from Oak Grove Campground to Skyline Lodge.

We reasoned that children who can independently shift from task to task are very flexible and able to adapt easily to different numerous formats and sets of directions. We decided to give such children a label: Workbookers.

Workbookers are good at recognizing and figuring out how to do different formats. Given the similarity of format types across subjects, we concluded that such skill serves them well in the workbook activities of any program--whether it be social studies, spelling, English, handwriting, or science. As we examined the variations among format types, we came to realize, however, that the skill of Workbookers includes not only the ability to cope with a number of *different* format types, but also involves the capacity to deal with an enormous amount of slight variation among similar--but not exactly the same--formats. For example: In responding to the multiple choice format, sometimes students must fill out the correct answer in a bubble, other times they must underline it, circle it, or write it out. (And what's more--which is probably neither here nor there, the letters they circle might reveal a secret word or phrase.) We suggest that students who perform well on these variations--the Workbookers--have learned a great deal about both generalization and discrimination, and about how to differentiate and relate their responses to the context of a given format or a certain subject. And that specifically, they have three sets of workbook behaviors well in hand: (a) recognizing and attending to the demands of different formats, (b) adapting to the variations of formats, and (c) proficiency in response modes.

Something Else

As we analyzed the formats, the response forms, and then finally the content of the workbooks, we gradually became aware of *something else* common to many workbook tasks. It also occurred to us that Workbookers understand this *something else* very well. For us to define *something else* requires us to step back and formulate a couple of common sense assumptions about the goals of workbooks.

We assume that workbooks are developed to provide students with practice in learning how to do something, or to provide them with help in remembering something. We also assume (and as a matter of fact, highly recommend) that workbooks be correlated closely with the rest of what the students are learning about a subject. So, for example, if a teacher-directed lesson in reading is about finding the main ideas of an article in the textbook, an associated workbook task would require the students to find main ideas in passages appearing in the workbook, as well as in what they read in their textbook. Or, if a social studies lesson is how to determine directions on maps, a companion workbook page would have students do map work by following directions.

A not too unreasonable belief that emerges from these two assumptions is that the content of a workbook should resemble the fundamental characteristics of the program it accompanies. In which case, reading workbook tasks should contain content that is like the text of a book (or a specific aspect of reading instruction); science workbook tasks contain content that is like learning about science or applying scientific information to a particular problem.

As we examined workbooks across subjects, however, we came to realize that, quite often, the content of workbook pages did not resemble the fundamental characteristics of the subject of the program. For example, one of the goals of reading instruction is that students learn to read connected text. As they do so, they must understand that what is communicated in one sentence in a paragraph is usually related in some way to the preceding or subsequent sentence. Yet, the text in many workbook tasks that *looks* connected has to be read as disconnected. We saw many tasks in which students were asked to respond in some way to lists of single sentences. Example A illustrates such a task.

[Insert Example A about here.]

Children doing this task are going to be in trouble if they try to find a referent in sentence 1 for the pronoun in sentence 2. The trouble will be caused by applying what they know about reading connected text in a book to reading this workbook text. On the contrary, they must suspend what they know about reading connected text to perform this task.

Another example: Research about story grammar and story structure (Mandler, 1984) has a lot of appeal to many teachers, and as a matter of fact, to many publishers. The idea is that stories have an identifiable structure, and that to better understand and remember them, students can learn to identify and label the elements of stories. In many basal reading programs the instructions to the teacher and specified questions in the teacher's manual reflect these notions. Yet, the pages of reading workbooks contain lots of paragraphs labeled as *stories* that wouldn't make it through a story grammarian's structure. Students who attempt to apply what they know about story structure to determine how the main character in a "story" such as the one in Example B makes decisions are headed for cognitive dissonance.

[Insert Example B about here.]

These children will be further confused about the concept of story when they read the "story" in Example C, which is about teeth. This "story" ends with the requirement that the student examine the teeth of animals to determine whether they are good for eating plants or meat. Perhaps this task is a story after all--a mystery. The characteristics of teeth the passage describes are not evident in the pictures--and in case you are curious, the creature in the lower right hand corner is a snake.

[Insert Example C about here.]

As we thought about the differences between fundamental characteristics of subjects and their manifestations in workbooks, we gradually came to the conclusion that the *something else* that Workbookers understand is how to adjust (or perhaps to even suspend belief in), what they know from elsewhere to accommodate to the task demands of workbooks. In attempting to analyze the components of this *something else*, we concluded the existence of a *workbook genre* that consists of a complex set of conventions unique to the tasks found in workbooks. We believe that this genre has evolved, not intentionally, but rather through the years of labor that workbook writers have devoted to the creation of workbook tasks. Although this genre has never been considered--and we assume never will be--by literary experts, we think it has as many nuances as a short story, and furthermore, that it can be as confusing in form and style as some contemporary poetry. (We firmly suggest, however, that the workbook genre will never rise to the level of *art*.)

Should the workbook genre be taught? The rationale for instructional practice in a variety of genres has a basis in research about reading. Readers employ different cognitive processes when they read, for example, narrative text as compared to expository text, and instruction can help them understand and use these processes. Although there exists some research about direction following, to our knowledge, the processes associated with how students deal with the content of workbooks while simultaneously following varying formats have not been seriously studied. We suggest, however, that

an examination of the workbook behaviors of Workbookers would reveal some very specific cognitive--and metacognitive--strategies. We also believe that such an examination would reveal some specific characteristics of the workbook genre. We anticipate that it would be easy to label some of these characteristics as desirable, and some as undesirable.

We do not want to promote the existence of the workbook genre (let alone instruction in it) without asking a couple of important questions: What can we learn about the task demands of this genre from the analyses of workbook pages? And what kind of advice can we offer publishers that will permit them (a) to write workbooks so as to make this genre less illusive for *all* of those students who must deal with it, and (b) to provide help for students who don't--and probably without help won't--get the hang of it. In our attempt to formulate this advice, we reexamined some workbook tasks to predict their effects on the students working through them. We found we could divide these effects into two groups: *intended* effects and *unintended* effects. We will discuss our views of both the intended and unintended effects of workbook tasks in the following section.

Intended Effects of Workbook Tasks

Workbooks can serve teachers in two fundamental, intended ways: management and evaluation.

Management. Many teachers use workbook activities to help manage their classroom time, and (as everyone knows) workbooks can keep some students busy while their teacher works with other groups of students. As is evident, workbooks provide teachers with prepared practice materials to accompany the instruction contained in the reading and other subject area programs they are using.

Evaluating student performance. Something that is less evident should also be pointed out: Completed workbook tasks provide teachers with some very specific information about student performance. In day-to-day classroom activities, such information is not always so readily available. For example, a teacher working with a group of students during a reading period asks one student to read a passage or to answer some questions. If that student's response is acceptable, the teacher calls on another student. The teacher must assume that the students who are not responding are able to read the passage and answer the questions. With workbook activities, no one is passed over and no student can "sit silently" while others are answering. Of course it must be noted that workbook pages can be used to evaluate student progress with confidence only if the activities reflect important aspects of the instructional program.

Workbooks can also serve students. For example, workbook activities can provide:

Practice. Many concepts and skills require practice. Workbooks can provide that practice, and they can do it differentially, that is, with extra attention to those aspects of learning that are more difficult.

Writing. By requiring that students write words, sentences, and paragraphs, workbooks can provide practice in writing. Such tasks can be, in a sense, a bridge between "pure reading" and "pure writing."

Independent practice. Workbooks give students practice in working independently--a component of learning whose importance stretches far beyond doing workbook tasks.

Review and synthesis. Workloads can provide review of what is taught and activities in which students must synthesize what they have learned and make applications to new situations.

Sense of accomplishment. Workbooks can provide students with a sense of accomplishment, especially when the work is worthwhile, challenging but "doable," and has an occasional reward.

Direction following and test taking. Workbooks and experiences with a variety of test-taking formats provide students with practice in following directions.

Unintended Effects of Workbook Tasks

Do the effects of workbook tasks on students always come off as intended? We suspect not, and believe that some of the research discussed earlier in this chapter supports this suspicion, as could talking with any teacher who works with children having difficulty with workbooks. It is with these children in mind--the *non*-Workbookers--that we began to worry about the potential of workbook tasks for unintended effects.

Our conviction is that students who understand the workbook genre--Workbookers--are more or less immune to the unintended effects of workbooks, but that it is the other, less knowledgeable students who suffer from these effects. Furthermore, the consequences of the unintended effects of workbook performance on students can easily extend to their achievement in other, more central, aspects of their school performance. The first author of this report recalls full well observing a group of children in a fourth-grade classroom who read very well (at grade level), but who had a great deal of trouble with the details of reading contained in their workbook tasks. For example, in one task these students had to determine whether *ed* at the end of words on a very long list made the *ed* or the *et* sound. The poor grades on these kinds of activities--which these students received on a daily basis--contained a very negative, and in this case, unwarranted message about their general reading performance.

The unintended effects of workbook tasks are difficult to categorize. In an attempt to do so, we have combined our memories of our classroom observations of children working in workbooks with our own analyses of workbook tasks to produce a list, with examples, of some of the possible unintended effects of workbooks. In no way is this list complete, nor has it been verified by careful research. We propose it as a caution to teachers and submit it as a modest proposal to publishers.

1. Success goes to those who already know the answers.

Obviously, some concepts are not suitable to paper and pencil tasks. In many tasks, the amount of prior knowledge a student possesses would seem to have a critical influence on performance. In Example 1, this "transparent, translucent, opaque" task could serve as a review for students already acquainted with these concepts, but those not acquainted with the range of possibilities for the see-through characteristics of some lampshades and curtains seem headed for trouble.

[Insert Example 1 about here.]

2. Success goes to those who travel, and who know a lot.

Pictures do not reproduce well, but we assure you that even in the original, the pictures in Example 2 will not be of much help to students not at home with tropical rain forests, small towns in Italy, and the mountains of northern Norway. And we predict that the instructions to "Write some things you can tell about each of the lands along the longitude line at 15 degrees East" and "Now write a sentence about all three pictures" will only add to the nontraveled student's sense of bewilderment.

[Insert Example 2 about here.]

3. Success goes to those with good eyes, and who know a lot.

The task in Example 3, reproduced in its actual size, not only requires good eyes, but also requires students to color in Japan and Taiwan--terrific eye-hand coordination. Equally daunting is the amount of up-to-date information necessary to color in the right countries.

[Insert Example 3 about here.]

4. Language is not always what it seems to be.

An understanding of the range of possibilities for the relative terms "many" and "few" and the consequences of cause and effect statements is essential to this task in Example 4. Those students whose language skills are less sophisticated may end up with a statement such as "(Many people) live high up in the mountains because it is too cold and the landform is too steep"--as they think of Denver, Colorado.

[Insert Example 4 about here.]

5. Language is harder than it should be.

The task in Example 5, which even has an agreeable looking little map to provide some visual aid, turned out to be difficult for some of the grown people we asked to do it. (We reproduced the page from the answer book.) And yet its topic, what happened first and what happened next, is conceptually easy for most students--Workbookers and non-Workbookers alike.

[Insert Example 5 about here.]

6. Directions are not worth reading.

Teachers often complain that their students don't read directions. Well-written directions would probably be of help to students who are not natural Workbookers. The question is, of course, which directions are followable. Because of their workbook expertise, Workbookers probably save a lot of time by not reading most directions--on the other hand, they know when and how to seek some help. In Example 6, they might seek an explanation of the mysterious lines and numbers in the text. The last sentence in the directions will tell them to ignore the lines and numbers but might not put their minds at rest: Why are the lines and numbers on the page?

[Insert Example 6 about here.]

7. Meaning and description are just letters.

Tasks such as those in Examples 7a and 7b, in which numbers and letters stand for something else are common in workbooks. Even the most diligent of Workbookers will have trouble checking their work on these pages: **f 1. majority; d 2. jury as well as j 1. soybeans** do not add up to even a hill of soybeans. They certainly do not add up to either sensible meaning or enlightening description.

[Insert Example 7 about here.]

8. In addition to ending up as just letters, descriptions (and vocabulary definitions) always come out even.

That there are as many blanks and terms as descriptive phrases in Example 8 means that students focus on an elimination game, rather than on meaning, especially when working the last few items. By the simple move of furnishing more possible answers, workbook developers could change the way students approach these tasks.

[Insert Example 8 about here.]

9. Science is really just letters.

Unless a student has well-developed prior information about distillation, evaporation, steam, gas, and water vapor, it is unlikely that the picture of some laboratory apparatus in Example 9 will provide the information that needs to be understood to correctly fill in the blanks at the bottom of the page.

[Insert Example 9 about here.]

10. You have to be *very* smart to figure out secrets.

The "secret word" at the bottom of the page in Example 10a is the reward only for those students who manage to figure out how the letters opposite each sentence relate to the concepts, "true" and "false." That they don't relate won't bother the true Workbooker, but will probably make the task even more confusing for other students.

The secret word in the task in Example 10b will be reserved for only the most knowledgeable of Workbookers, who will probably figure out the secret word after they get a few of its letters, and then given the memory demands of the task, use its letters to help with the items they are having trouble with.

[Insert Examples 10a & 10b about here.]

11. The best way to use context is to leave it.

The Workbooker will go straight to the task in Example 11, and ignore the "story." Other students, who might benefit from figuring out how the words are used in text, will probably find the process of reading sentences in the story, and then skipping down to the task too distracting to be helpful. And of course, as usual, the secret message is only for those who get everything else right--although the Workbooker realizes that a little trouble in the secret message can be resolved by changing the answers in an item or two.

[Insert Example 11 about here.]

12. They must know what they are doing, and I don't, so I must be pretty dumb.

In Example 12, how does anyone but a Workbooker decide which numbers to write where, and which words to delegate to the more onerous task of putting into sentences? Does the **2.** go on top of the bluff as well as on the strange sign that says **62ft.**? Where does the **3.** for sea level go?

[Insert Example 12 about here.]

13. Life may not be a game, but it sure is a puzzle.

Examples 13a through 13f are but a small sample of the puzzle formats that are common to workbooks. How such activities affect learning is not a researched topic. But one, that given the number of puzzles that appear in workbooks, needs some investigation.

Example 13f is a puzzle about heart disease that came to us in a newsletter: Maybe workbook puzzles do prepare us for adult life, and maybe faulty workbook directions set us up for problems we will encounter all of our lives. (Please notice that the last sentence asks us to find the words in the puzzle *below*. That the puzzle is to the *side* caused us--old Workbookers that we are--no trouble at all.)

[Insert Examples 13a-13f about here.]

Conclusion

From our examination of the workbook "scene," we do not conclude that workbooks should be eliminated from American classrooms. We do not join those who would get rid of workbooks, no matter what. On the contrary, we worry a lot about throwing out babies with the bathwater--because of the reality of the need (by teachers and students) for the intended effects of these materials. So, the question is, can workbooks be improved so that more reliably their effects are as intended. We believe they can. The first challenge to the publishers who create them, and to the teachers who buy them, is a careful examination of their effects--both intended and unintended--on the students who use them. The next challenge is to figure out how to produce workbook tasks that are both "doable" and worthwhile. We believe that the workbook genre should not be mysterious, and furthermore, we believe that every child can become a Workbooker.

References

Anderson, L. (1981). *Student responses to seatwork: Implications for the study of students' cognitive processing* (Research Series No. 102). East Lansing: Michigan State University, Institute for Research on Teaching.

Anderson, L. (1984). The environment of instruction: The function of seatwork in a commercially developed curriculum. In G. G. Duffy, L. R. Roehler, & J. Mason (Eds.), *Comprehension instruction: Perspectives and suggestions* (pp. 93, 96). New York: Longman.

Anderson, L., Brubaker, N. L., Alleman-Brooks, J., & Duffy, G. G. (1984). *Making seatwork work.* (Research Series No. 142). East Lansing: Michigan State University, Institute for Research on Teaching.

Durkin, D. (1989). *New kindergarten basal reader materials: What's a teacher supposed to do with all this?* (Tech. Rep. No. 475). Urbana-Champaign: University of Illinois, Center for the Study of Reading.

Fisher, C., Berliner, D., Filby, N., Marliave, R., Cohen, L., Dishaw, M., & Moore, J. (1978). *Teaching and learning in elementary schools: A summary of the beginning teacher evaluation study.* San Francisco: Far West Laboratory for Educational Research and Development.

Good, T., & Beckerman, T. (1978). Time on task: A naturalistic study in sixth grade classrooms. *Elementary School Journal, 78,* 23-28.

Mandler, J. M. (1984). *Stories, scripts, and scenes: Aspects of schema theory.* Hillsdale, NJ: Erlbaum.

Meyer, L. A., Wardrop, J. L., & Hastings, C. N. (1989). *Interim report of trends from a longitudinal study of the development of reading comprehension ability.* Unpublished manuscript. Urbana-Champaign: University of Illinois, Center for the Study of Reading.

Osborn, J. (1984). The purposes, uses and contents of workbooks and some guidelines for publishers. In R. C. Anderson, J. Osborn, & R. J. Tierney (Eds.), *Learning to read in American schools: Basal readers and content texts* (pp. 40-55). Hillsdale, NJ: Erlbaum.

Osborn, J. (1985). Workbooks: Counting, matching, and judging. In J. Osborn, P. T. Wilson, & R. C. Anderson (Eds.), *Reading education: Foundations for a literate America* (pp. 11-28). Lexington, MA: Lexington Books.

Table 1

Format Types

	Reading A	Reading B	Reading C	Reading D	Social Studies B	Social Studies E	Social Studies A_1	Social Studies A_2	English E	English B	Spelling F	Spelling D	Science G (Lab book)	Science H	Science I	Health A	Language Arts D
PUZZLES																	
crossword		X				X	X	X	X	X	X	X		X	X	X	X
lettergrid						X	X	X			X	X		X	X	X	X
secret word					X	X	X	X	X	X	X	X		X	X	X	X
code/scrambled			X			X		X			X	X	X	X	X	X	X
VISUALS																	
graphs	X	X	X	X		X	X		X	X				X	X	X	X
maps	X	X	X	X	X	X	X				X	X	X	X	X	X	X
charts	X	X	X	X	X	X	X		X	X	X		X	X	X	X	X
diagram labeling	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X
FACSIMILIES																	
dictionary	X	X	X	X					X	X	X						
index	X	X	X	X													
newspaper								X			X						X
reference	X	X	X	X		X			X		X						
letters	X	X							X								X
table of contents		X		X					X								
TV guide		X									X	X					

Table 2

Ways of Responding

	Reading A	Reading B	Reading C	Reading D	Social Studies B	Social Studies E	Social Studies A_1	Social Studies A_2	English E	English B	Spelling F	Spelling D	Science G (Lab book)	Science H	Science I	Health A	Language Arts D
RESPONSE TYPES																	
elimination	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	
underlining	X	X			X	X	X	X	X	X	X	X				X	
matching		X	X	X	X	X		X	X	X			X	X			
multiple choice	X	X	X	X	X	X	X	X	X	X	X	X	X				
fill in blanks	X	X	X	X	X	X	X	X	X	X	X		X	X	X		
writing		X	X			X	X	X	X	X		X	X	X	X	X	
ordering	X	X	X		X	X			X	X			X		X		
READ & RESPOND																	
short passages		X	X	X	X		X	X	X	X	X	X	X		X	X	X
DIRECTIONS																	
location confusing	X	X					X	X				X					
multiple directions	X		X	X		X	X	X	X	X	X	X				X	

C Extra Attractions: Other Word Skills

Dictionary Skills

You learned in Unit 16 that many words may not be listed as entry words in a dictionary. These words can be found under the words from which they are formed. Read these sample dictionary entries.

drive drīv *v.* **1** make go **2** to take a trip in an automobile **3** force, urge on **drove**, **driv • en**, **driv • ing**
find find *v.* **1** to look for and get. **2** to come upon **found**
half haf *n.* **1** one of two equal parts. **2** one of two equal periods of play in certain games. *pl* **halves**
pic • ture pik' cher *n.* **1** a drawing, painting, or photograph. *v.* **2** to imagine. **pic • tured**, **pic • tur • ing**
slop • py slop' ē *adj* **1** very wet. **2** careless; messy. **slop • pi • er**, **slop • pi • est**
wet wet *adj* **1** covered or soaked with water or other liquid. *v* **2** to make wet. **wet • ter**, **wet • test**

Complete the following sentences by using words listed under the various entry words. Then write the number of the definition of that word as it is used in the sentence.

1. The cloth must be ___ than it is to clean the table. _____ ___
2. Her desire to win ___ her on. _____ ___
3. Both ___ of the soccer game were exciting. _____ ___
4. We were ___ down Highway 24 towards town. _____ ___
5. If your room was any ___, you would never be able to find anything. _____ ___
6. Joan divided the apple into two ___. _____ ___
7. Tony ___ the house by following the map. _____ ___
8. I was ___ the scene in my mind as the director described it. _____ ___
9. The machine is ___ by two large engines. _____ ___
10. His handwriting is probably the ___ I have ever seen. _____ ___

Reading a Story

- The main character in a story often has to make decisions.

A. Read the following story. Answer the questions below.

Danny and his family invited Justin on a weekend ski trip. Justin had skied only twice, but he knew he could learn a lot about the sport from Danny. Justin told Danny that he would like to go.

On the way to the ski lodge, Danny told Justin how glad he was to have a real skier along. "That's right," Danny's mother said. "The last friend who came along was just a beginner. Danny had to spend the whole weekend teaching him to ski."

"I sure was bored!" agreed Danny. "But it's going to be different this time. You and I can go right up to the expert slope and race all the way to the bottom. It'll be great!" said Danny. "I can hardly wait."

Justin gulped, realizing that Danny had gotten the wrong idea about his skiing. What could he do about it now?

1. What decision does Justin have to make?

_____

2. What might happen if Justin tells Danny the truth?

_____

3. What could happen if Justin doesn't tell Danny that he's a beginner?

_____

_____

4. What would you do if you were in Justin's place?

_____

WORKBOOK 50

Name _____

Teeth

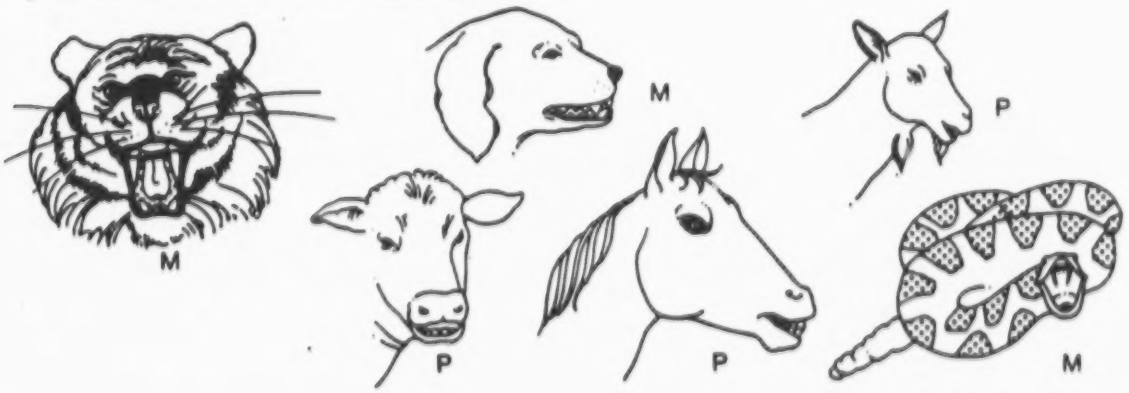
Read the story about teeth. Then complete the activity below.

Use a mirror to look at your teeth. They are well-fitted for the food you eat. The front teeth, called *incisors*, are very sharp. They cut food. At the corners of your mouth are sharp, pointed teeth called *cuspids*. They tear food apart. Behind the cuspids are the *premolars*. These teeth tear and grind food. At the back of your mouth are large *molars*. Their flat tops make them good for grinding and crushing food. These four kinds of teeth help you chew foods from both plants and animals.

An animal's teeth must be fitted for the kinds of foods it eats. Meat-eating animals, such as tigers, have very large incisor and cuspid teeth. They use these teeth for catching and tearing their prey.

Plant-eating animals, such as cows, have sharp incisors. They use these teeth to cut plants. Their large molars grind the food into a pulp.

Look at the teeth of the animals below. If the teeth are good for eating meat, write *M* on the animal. If the teeth are good for eating plants, write *P* on the animal.

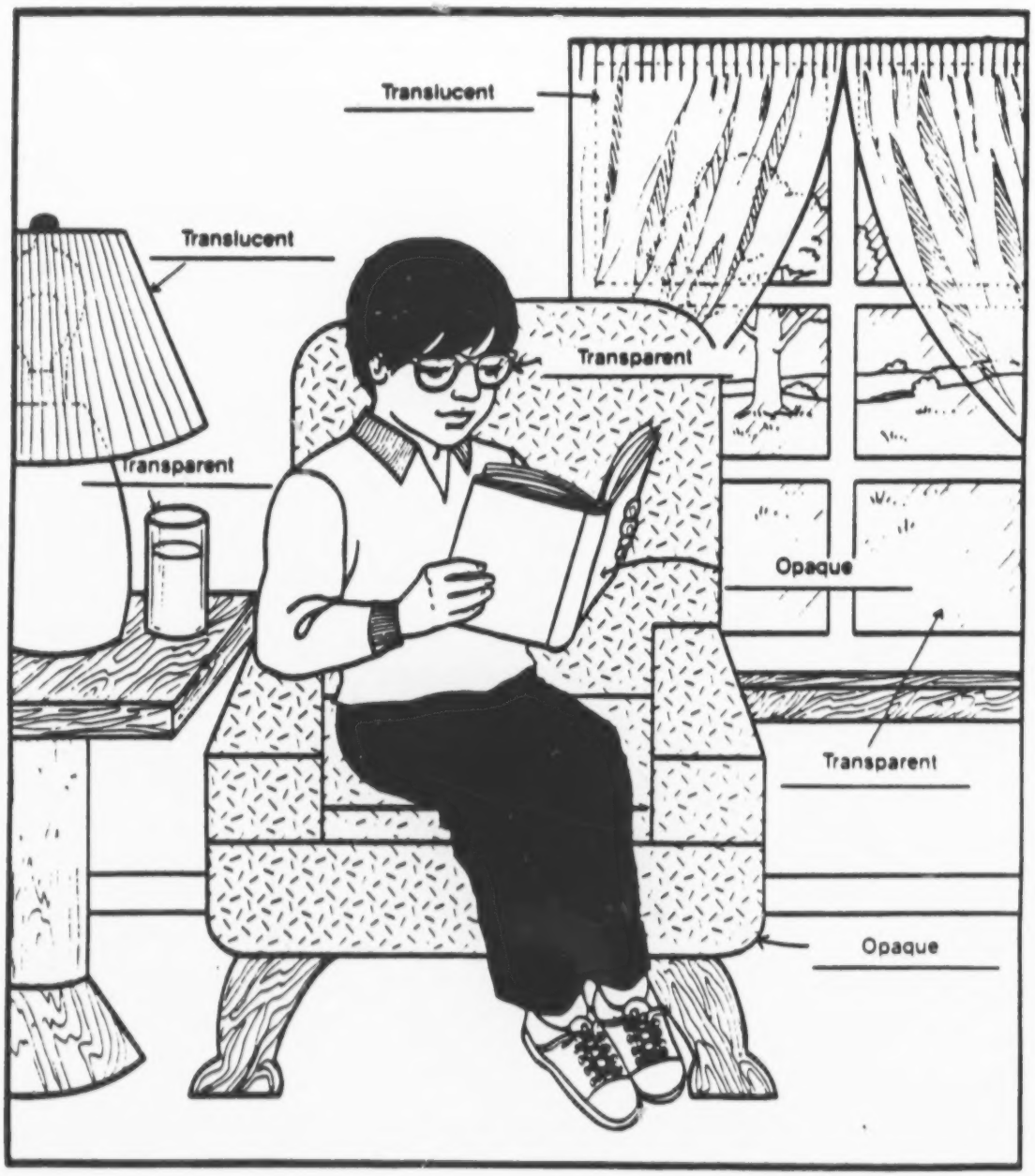


WORKBOOK 23

Name _____

Transparent, Translucent, Opaque

Look at the picture below. Decide whether each arrow points to an object that is transparent, translucent, or opaque. Write the correct word on each line.



Traveling at 15° East Longitude

Example 2

You have just taken imaginary trips around the world on five latitude lines. Now we're off on another imaginary trip! This time we'll follow a longitude line from the Equator to the North Pole. Our trip takes us north along the longitude line at 15° East. It's the winter season. As we travel north, we'll see changing climates and landscapes. Here are three pictures of lands we'll see.

1. Near 0° at the Equator in Africa

2. Near 40° North in Italy

3. Near 70° North in northern Norway

Study these pictures. Write some things you can tell about each of the lands along the longitude line at 15° East.

1. _____

_____

2. _____

_____

3. _____

_____

Now write a sentence about all three pictures.

_____

_____

_____

Look at the map. On this map, color the countries that export products to the United States.

Choosing Places to Live

By joining the two parts of the sentences below, you will find out why people live where they do.

In Part 1, choose the beginning that makes that part of the sentence correct. Circle the correct words in parentheses. Then draw a line from the beginning of each sentence in Part 1 to a reason in Part 2 that makes the sentence true.

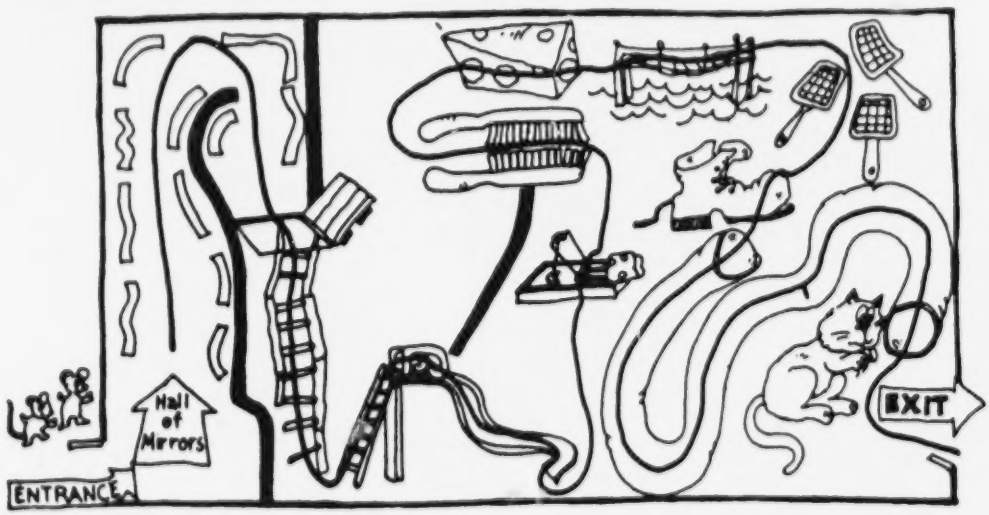
Part 1	**Part 2—Reason**
1. (Many people) (Few people) live in tropical rainforests because . . .	there is not enough rain.
2. (Many people) (Few people) live in deserts because . . .	it is too hot and wet.
3. (Many people) (Eew people) live between 20 and 40 degrees latitude because . . .	it is too cold and the landform is too steep.
4. (Many people) (Few people) live high up in mountains because . . .	there is enough water for their needs.
5. (Many people) (Few people) live along rivers because . . .	the climate is comfortable.

UNIT 14

Shorty and Squeaky went through a fun house. Later, Shorty wrote a letter to a friend describing their adventure. Each sentence below is from the letter and tells that one event happened before the other. Underline the event that happened first in each sentence.

1. After Squeaky and I walked through a hall of funny mirrors, we came to a trap door.
2. Before we climbed to the top of a big slide, we had to climb down a rickety ladder at the trap door.
3. Squeaky and I slid down the slide; we tiptoed to the mouse trap next.
4. We carefully climbed over the mouse trap before we squeezed between two hairbrushes.
5. Before we could get to the shaky bridge, we had to crawl through the holes in the Swiss cheese.
6. We raced through the fly swatters after we crossed the shaky bridge.
7. Squeaky and I rested a few minutes on an old shoe; then we crawled through a twisting tunnel.
8. We had to pass a huge cat with sharp claws before we went through the exit door.

On the map below, draw the path that Squeaky and Shorty took through the fun house. Be sure to draw it in the correct sequence.



Name _____ Date _____

Read the beginning of the story below. Following it are two possible endings, marked A and B. Write R in the blank before the ending that makes the story realistic fiction, and F before the ending that makes it a fantasy. Pay no attention to the lines under and the numbers above some of the words.

Karen plopped onto her bed. "I'm exhausted," she thought. "How will I ever stay awake to read *The Princess Twins*? I'm half asleep already, but I've got to finish the book and write my report for school tomorrow."

Karen's mother had warned her to start her work earlier, but Karen deeply wanted to go to the party. "I'll do my report later, Mom," she had said. "This small party means so much to the little children at the Orphans' Home." Now Karen was trying to keep her eyes open while they wanted to be closed.

F

___ A. Soon something very odd, very strange, began to happen. The picture on the page seemed to spin around, and out of the book stepped a lovely fairy princess with a beautiful golden crown on her head.

"You were kind to those children, Karen," she said, "so I'm going to do something nice for you. Here's your report all done. Now go to sleep, so that you'll be able to get up in time for school tomorrow."

Karen felt a great sense of relief and was glad that she had chosen a book with such a kind princess in it.

R

___ B. As Karen stared at the page, the print started to whirl slowly. Then it started to spin faster and faster. When the print stopped moving, there was a neatly typed book report. "What a relief!" thought Karen, as she smiled happily.

The next thing Karen knew, her mother was shaking her. "It's time to get up, Karen," she stated.

"Where's my report?" said Karen, looking down at the open book that had dropped from her hands. "Oh, no! Nobody wrote my book report for me. It was all a dream!"

Challenge!

Think of a realistic-fiction story. Write a sentence that tells about the problem a character has and a sentence about how he or she solves it. Then write a sentence that tells how he or she would solve that same problem if the story was a fantasy. You may also wish to illustrate each story, showing how the problem was solved.

Chapter 12 Vocabulary

Example 7a

Read the words in the list on the left. Read the meanings in the list on the right. Write the letter of a meaning in the space beside each word. One meaning will not be used.

f	1. majority	a. rule by the people
d	2. jury	b. money that people pay to help run the government
a	3. democracy	c. a change, especially an addition to a government document
e	4. Constitution	d. a group of citizens who decide on a case of law
h	5. representative	e. the written plan of government for the United States
c	6. amendment	f. one more than half of the entire number
i	7. federal	g. the first ten amendments to the Constitution
g	8. Bill of Rights	h. a person who speaks or acts for another person or for a group
k	9. Congress	i. central or national
b	10. tax	j. the executive branch of the government that enforces the laws
		k. the legislative branch of the United States' government

Bonus: On a separate sheet of paper, write original sentences for each word in the list on the left.

Name _____

Chapter 11 Lesson 2

Read the items in the list on the left. Read the descriptions in the list on the right. Write the letter of a description in the space beside each word. One description will not be used.

j	1. soybeans	a. oldest city in United States
e	2. Piedmont	b. place of first English settlements
i	3. Norfolk, VA	c. place where jazz began
m	4. Florida	d. place famous for its beaches
l	5. sugar cane	e. country's leading producer of textiles
n	6. France	f. place where "blues" began
a	7. St. Augustine, FL	g. location of famous homes of 1700s and 1800s
r	8. paper	h. natural resources of Southeast
c	9. New Orleans, LA	i. location of Azalea Festival
h	10. oil, natural gas, coal	j. used to make margarine
o	11. slaves	k. fruit grown in Southeast
b	12. Virginia	l. crop grown in Puerto Rico
q	13. cloth	m. state that grows oranges
d	14. Miami Beach, FL	n. country that built settlements in Southeast
p	15. cotton, rice, tobacco	o. blacks brought from Africa
k	16. peaches	p. crops of the Southeast
g	17. Charleston, SC	q. products made from cotton
		r. product made from trees

WORKSHEET

Describing Natural Features

Example 8

Write the letter of each description at right in the blank in front of the correct natural feature.

f 1. Cascade Ranges
b 2. Great Plains
i 3. Mt. McKinley
k 4. Atlantic Ocean
d 5. Great Lakes
c 6. Sierra Nevada
m 7. Coastal Plain
j 8. Central Plains
g 9. Appalachian Mountains
h 10. Mississippi
e 11. Coast Ranges
a 12. Pacific Ocean
l 13. Rocky Mountains

a. the ocean on the west coast of the United States
b. the region between the Rocky Mountains and the Mississippi River
c. the "snowy mountains" in California
d. the largest freshwater lakes in the world
e. the mountains closest to the Pacific Ocean
f. the mountains in Washington and Oregon
g. the mountains directly west of the Atlantic Coastal Plain
h. the river that extends from Minnesota to the Gulf of Mexico
i. the highest mountain in the United States
j. a flat area that includes Illinois and Indiana
k. the ocean on the east coast of the United State
l. the mountains that reach from Alaska to New Mexico
m. the low, flat area that extends from Massachusetts to Texas

Answer the following questions.

1. How is a plateau like a plain?
They are both flat.

2. How is a plateau different from a plain?
A plain usually has a low elevation; a plateau has a high elevation.

WORKSHEET

Understanding Distillation

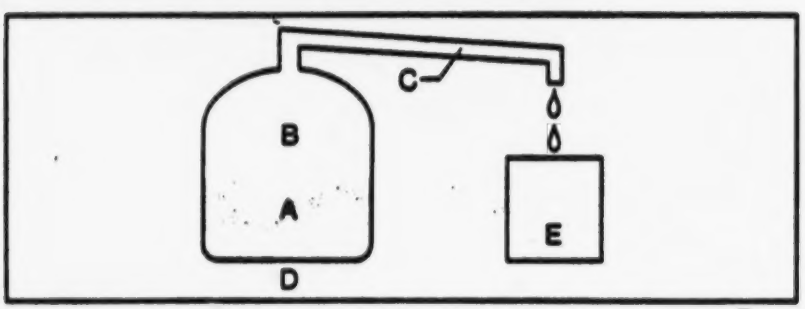
Almost all of the earth's water is salt water, found in oceans and salty seas. Because sea water contains so much salt, it cannot be used as is for drinking, irrigation, or industry. However, people have discovered ways to remove the salt from sea water. One of these ways is called *distillation*.

When water is heated to a very high temperature, it begins to boil. When water boils, it changes from a liquid into a gas called water vapor. The steam you see coming from a pot of boiling water is a form of water vapor.

When sea water is boiled, the water changes to steam and mixes with the air around it. The salt from the sea water is left behind.

In distillation, the steam goes into a place where it is cooled. As it cools, the steam changes back into water. Since the salt was left behind, the cooled steam becomes fresh water. Distillation is the name given to this way of changing water into a gas and then back into a liquid in order to make it pure.

The drawing below shows how distillation works. Fill in each blank with the correct letter from the drawing. You may use a letter more than once.



1. Heat is applied here. ___D___
2. Cold is applied here. ___C___
3. Fresh water is collected here. ___E___
4. Salt water is here. ___A___
5. Steam is here. ___B___
6. Salt remains here. ___A___
7. Water is changed into steam here. ___B___
8. Steam is changed into water here. ___C___

Name _____

Chapter 10 Lesson 1

If a sentence below is **true**, circle the letter under **True**. If a sentence is **false**, circle the letter under **False**. The first one has been done for you.

	True	False
1. Black Mountain is the highest point in Kentucky.	(S)	B
2. A highland is an area of valleys.	F	(O)
3. Tennessee is a state in the Southern Highlands.	(U)	A
4. A spring is water that comes from underground.	(T)	G
5. A hot spring has cold water.	E	(H)
6. Kentucky is famous for its cow farms.	C	(E)
7. Seven states can be seen from Lookout Mountain.	(R)	S
8. Almost half of West Virginia has coal beneath the land.	(N)	T
9. The Mississippi River is part of the border of Arkansas.	(H)	D
10. The Ohio River borders Tennessee.	B	(I)
11. Dams help to provide electricity.	(G)	K
12. Winters are long in the Southern Highlands.	J	(H)
13. The Appalachian Trail is more than 2,000 miles long.	(L)	S
14. The Appalachian Highlands are in seventeen states.	X	(A)
15. The Cumberland Gap is located in Texas.	E	(N)
16. A gap is an opening between mountains.	(D)	Q
17. The gaps were getaways for the pioneers.	P	(S)

On the lines below write the letters you circled.

S	O	U	T	H	E	R	N		H	I	G	H	L	A	N	D	S
1	2	3	4	5	6	7	8		9	10	11	12	13	14	15	16	17

83

Puzzling Raindrops

It's hidden here in drops of rain,
A puzzle that will test your brain!

Who Am I?

I am a huge snake that loves to live in trees. _ _ _ _ _ _

I am winds bringing needed rain to India. _ _ _ _ _ _ _ _

I'm a thick, moist jungle. _ _ _ _ _ _ _ _ _ _

Crowded with people, I am a city in India. _ _ _ _ _ _

I am the second largest river in the world. _ _ _ _ _ _

I am the dry time when rains don't come. _ _ _ _ _ _ _

Without me, nothing can live. _ _ _ _ _

I have a long body, thick skin, and a mouth that's ready to SNAP!

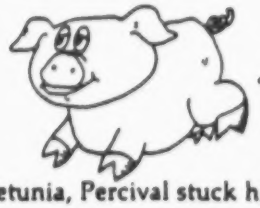
_ _ _ _ _ _ _ _ _

Baskets and rope are made from me. _ _ _ _

Write the letters in the raindrops above on the lines below to finish the poem.

If it's a jungle, you can bet,

The climate will be _ _ _ _ _ _ _ _ _!



Use the context to help you figure out the meaning of each underlined word in the following story. Below the story each underlined word is listed with three lettered meanings. Draw a line around the letter of the correct meaning.

Two pigs stood looking through a gap in the pigpen. Percival was rude and pushy, but Petunia was sweet and demure. Percival grunted loudly, "Hey, look at the world out there! It's full of delicious peanuts and roots! Let's escape from this dirty enclosure and get some tasty food for a change! I'm tired of the usual garbage."

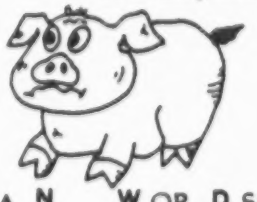
His comrade smiled at this brash idea. "Not me," Petunia squealed. It's cozy and safe here, and I abhor anything dangerous. You go ahead and escape! You're the intrepid one!"

Glaring at Petunia, Percival stuck his snout high into the air. "Very well," was Percival's haughty reply. "I'll show you. I *will* escape!"

But hours later, Percival was still inside the pigpen muttering, "Just watch me break out of this place! I hate being confined here."

As night fell, Percival's tongue was still wagging, but his body had not budged. The reticent Petunia sat back and politely said nothing. But every now and then, she smiled and whispered an old saying.

1. demure	(A) shy	B. noisy	C. horrible
2. enclosure	M. sky	N. road	(O) pen
3. comrade	(P) friend	Q. master	R. enemy
4. brash	I. timid	J. unkind	(K) bold
5. abhor	T. invite	(U) hate	V. love
6. intrepid	Q. frightened	(R) brave	S. nice
7. haughty	(H) snobby	I. sad	J. friendly
8. confined	L. found	M. lost	(N) penned
9. budged	V. darkened	(W) moved	X. rested
10. reticent	(D) quiet	E. unhappy	F. bad-tempered



What old saying did Petunia whisper? Find out by filling in each numbered blank below with the letter you circled in the item above that has the same number.

A(1) CTI O(2) NS S P(3) EA K(4) LO U(5) DE R(6) T H(7) A N(8) W(9) OR D(10) S!

Chapter 3 Vocabulary

Example 12

Write the number of the word on the part of the picture that the word describes. Use pages 69–83 in your book to help you. Some words may be used more than once. On a separate sheet of paper, write sentences that include the words not used in the picture.

1. landform
2. elevation
3. sea level
4. climate
5. altitude
6. region
7. natural resource
8. conservation
9. boundary
10. energy source

WORKSHEET

A Word Scramble

Use the clues to unscramble the words. Each word can be found in Lesson 6 of Chapter 16.

1. connected to Leningrad by a river
   CATLIB ESA B A L T I C S E A
2. made of snow and ice
   CRILAGE G L A C I E R
3. used by ships entering Leningrad
   BRAHOR H A R B O R
4. obtained from animals
   SRUF F U R S
5. built long ago in Leningrad
   ELAPSAC P A L A C E S
6. seen at night during summer in the North Pole
   DIGMITHN UNS M I D N I G H T S U N
7. located in central Alaska
   SKABFARIN F A I R B A N K S
8. used in baseball in Alaska
   NSOSEOHWS S N O W S H O E S
9. known as the city of "white nights"
   NEGDLARIN L E N I N G R A D
10. caused by melting snow
    SOFLOD F L O O D S
11. held for fun during Alaskan winters
    GDO-LDES SERAC D O G-S L E D R A C E S
12. worn by the people of Leningrad in winter
    SPENSHIKE STOCA S H E E P S K I N C O A T S

Abbreviations

Example 13b

Abbreviations are time and space savers because they let you write the short forms of words. Abbreviations are formed in different ways. Look at these examples: Avenue—Ave., Boulevard—Blvd., very important person—VIP, Florida—Fla. or FL, Doctor—Dr.

Write the letters of the abbreviations in the puzzle. Use the clues to help you. Add periods to abbreviations that need them. The letters in the boxes will spell a message for you—if you write the correct abbreviations.

	1.	N	Y			1. Postal abbreviation for *New York*
2.	B	R	O	S.		2. Abbreviation for *Brothers*
	3.	T	U	E	S.	3. Abbreviation for *Tuesday*
	4.	P	K	W	Y.	4. Abbreviation for *Parkway*
	5.	I	N	C.		5. Abbreviation for *Incorporated*
	6.	M	O	N.		6. Abbreviation for *Monday*
	7.	N	W			7. Abbreviation for *northwest*
	8.	W	Y			8. Postal abbreviation for *Wyoming*
	9.	O	C	T.		9. Abbreviation for *October*
	10.	U	N			10. Abbreviation for *United Nations*
11.	F	R	I.			11. Abbreviation for *Friday*
	12.	S	W			12. Abbreviation for *southwest*
13.	S	T.				13. Abbreviation for *street*
	14.	U	S	A		14. Abbreviation for *United States of America*
	15.	F	E	B.		15. Abbreviation for *February*
16.	U	F	O			16. Abbreviation for *unidentified flying object*

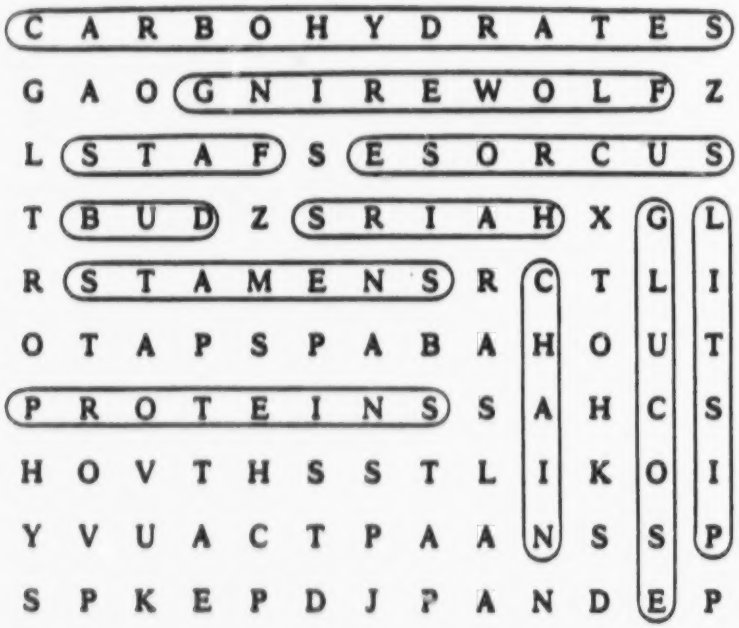
WORKBOOK 60

Name _____

Word Search

A. The words below are hidden in the box. Look up, down, to the right, and to the left to find them.

chain	glucose	sucrose	fats
proteins	carbohydrates	pistil	hairs
bud	flowering	stamens	


C A R B O H Y D R A T E S
G A O G N I R E W O L F Z
L S T A F S E S O R C U S
T B U D Z S R I A H X G L
R S T A M E N S R C T L I
O T A P S P A B A H O U T
P R O T E I N S S A H C S
H O V T H S S T L I K O I
Y V U A C T P A A N S S P
S P K E P D J P A N D E P

B. Write the correct word from the puzzle on each blank.

1. Water enters a plant through root _____hairs_____.
2. A sugar made by green plants is _____glucose_____.
3. The beginning of a new leaf, stem, or flower is a _____bud_____.
4. Oils are _____fats_____ that are liquid at room temperature.
5. In a food _____chain_____, each living thing depends on the next for food.
6. _____Flowering_____ plants have flowers, fruits, and seeds.

Alaska's Natural Environment

The column on the left below lists nine words that were used on pages 52–57 of your textbook. In the right-hand column are definitions of these words. In the space before each word in the left-hand column, write the number of its correct definition in the right-hand column. Then find the same words in the puzzle.

WORD	DEFINITION
_____ natural resource	1. The frozen lowlands of Alaska that are closest to the North Pole
_____ Arctic Circle	2. Trees that have been sawed into boards, beams, and other forms of wood
_____ strait	3. Electric power generated by the force of water
	4. Land below the earth's surface that is always frozen
_____ permafrost	5. Line of latitude located located at 66½° north of the Equator
_____ tundra	6. A place that protects people or animals
	7. Things useful to people and supplied by nature
_____ refuge	8. A narrow strip of water that connects two larger bodies of water
_____ climate	9. A region's precipitation, wind, and temperature over a long period of time
_____ lumber	
_____ hydroelectric power	

Z	H	Y	D	R	O	E	L	E	C	T	R	I	C	P	O	W	E	R	Y
M	A	N	Y	E	S	L	O	R	E	Y	E	A	P	R	L	A	G	O	K
F	P	O	H	F	W	C	L	I	M	A	T	E	Y	O	K	F	Q	Y	P
R	E	P	I	U	E	R	Z	I	Q	N	Z	P	Q	F	T	Z	N	Z	T
J	R	W	D	G	E	I	Q	K	J	N	K	J	A	S	O	M	S	T	K
O	M	F	V	E	R	C	P	R	T	G	O	A	Z	L	T	D	R	Q	Y
N	A	F	W	Q	S	C	O	N	M	Y	Q	N	O	D	T	R	S	H	E
K	F	Y	Z	I	R	I	Z	M	K	X	R	V	Y	V	E	D	A	T	Q
Y	R	Z	O	Y	O	T	U	N	D	R	A	Y	N	B	Q	H	I	I	Z
A	O	K	L	M	P	C	P	D	K	O	R	J	M	H	P	T	J	N	T
N	S	L	X	U	L	R	N	D	Z	I	A	U	B	N	C	U	K	F	O
K	T	P	O	T	N	A	T	U	R	A	L	R	E	S	O	U	R	C	E

A	W	F	U	L	■	■	■	B
M	E	■	■	E	■	A	T	E
■	T	H	E	I	R	■	W	E
B	■	I	L	■	■	M	E	S
E	■	■	L	O	R	E	N	■
A	N	N	E	■	■	■	T	O
G	O	■	N	I	C	K	Y	■
L	■	■	■	D	■	E	■	D
E	■	■	M	A	G	G	I	E
S	T	A	Y	■	O	■	N	■

S A Y I T
1 2 3 4 5

A L I T T L E L O U D E R.
6 7 8 9 10 11 12 13 14 15 16 17 18

Get to the HEART of it!

In the past decade, the death rate from heart disease has declined steadily by about three percent per year. Some of this is undoubtedly due to a new health consciousness in America and a better understanding of the things that increase the risk of heart disease.

Test your awareness by finding the words in the puzzle below that pertain to the health of your heart and its components.

B	X	A	C	N	B	D	F	R	O	T	H	M	S
L	C	H	O	L	E	S	T	E	R	O	L	E	
O	X	Y	G	E	N	R	V	E	I	K	L	O	
O	F	A	O	R	T	A	E	X	E	C	P	X	
D	M	S	O	D	I	U	M	E	I	N	A	B	
P	L	P	N	I	P	A	H	R	Y	O	C	L	
R	V	E	G	E	U	R	T	C	P	S	E	D	
E	P	A	U	T	M	N	E	I	P	U	M	P	
S	E	A	L	T	E	H	A	S	S	T	A	N	
S	B	L	X	V	B	R	E	E	S	A	K	E	
U	H	V	J	E	E	Y	N	A	T	U	E	M	
R	V	E	S	I	Z	E	P	C	R	E	R	U	
E	M	L	U	N	G	S	G	A	E	T	S	E	
W	U	K	Y	S	O	O	Q	U	S	M	A	P	
P	U	L	M	O	N	A	R	Y	S	S	E	G	